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CURRENT LITERATURE.

BOOK REVIEWS.

Pathological plant anatomy.[1]

WITHIN the past few years several books on plant pathology have appeared, some of them being of great value. They have dealt almost exclusively, however, with but one side of the question, the cause and prevention of plant diseases, rather than with the phenomena shown by diseased plants themselves. The work now under consideration, as its title indicates, takes up an entirely different aspect of pathology, viz., the anatomy of pathological growths. Such conditions as are mere degenerations, like the decay caused by many fungi, are not discussed, but those progressive anatomical developments resulting from pathological conditions or causing them. This book differs from others in which pathological anatomy is discussed in that the pathological structures are classified, not according to the external causes supposed to produce them, nor according to their place of origin on the plant, but according to their actual structure as compared with one another.

The five descriptive chapters take up the following main subdivisions of the subject: *Restitution*, the process of replacing lost parts, is treated here, since the formation of the reparatory tissue, like the formation of many pathological tissues, is connected with a utilization of energy, which is spared the organism that develops normally. *Hypoplasy*, the incomplete development of cells or tissue, may affect only the size or other features of development, as for example the amount of differentiation. *Metaplasy*, by which is designated every progressive change of a cell that is not connected with its abnormal enlargement or division. *Hypertrophy*, used in the sense that Virchow used it, designates the production of abnormally large cells, which may be single or grouped to form an abnormal tissue or organ. It is to be distinguished from the subject of the following chapter, *hyperplasy*, which, again in Virchow's meaning, is the abnormal increase in size of tissues or organs caused by an abnormal multiplication of cells. The last two subjects are extensively discussed, the former having the following subdivisions: hypertrophy as a result of suppression of the division of the growing cell where normally division should occur; as a result of etiolation; hyperhydric growth, including the so-called "oedemata"; tyloses; gall hypertrophies, *e.g.*, galls due to Erineum and Synchytrium; and multinucleate giant cells, occurring mostly in hyperplastic growths and forming a transition to that subject. Hyperplasy exhibits itself in two general types; homoeoplasy, where the elements of the abnormal tissue are the same as those of the tissue from which it is derived, and heteroplasy, where the elements are in part or all different. The latter contains by far the greatest number of cases. Under it are grouped most calluses, wound cork, wound wood, and the vast majority of galls. The latter are very extensively discussed. Most of the galls caused by parasitic plants come under the heading of kataplasms, while the highly organized galls, of definite structure and form, mostly of insect origin, are discussed under the heading of protoplasms.

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[1] KÜSTER; ERNST, Pathologische Pflanzenatomie. pp. vii+312. *figs. 121.* Jena: Gustav Fischer. 1903. *M* 8.

The final chapter is devoted to theoretical considerations, and is in many respects the most interesting chapter in the book. Here are considered, so far as our knowledge will allow, the factors causing the various modifications of cells and tissues. The stimuli themselves are discussed, the reaction of cells and tissue to the stimuli, and finally the comparative sensitiveness of different tissues to the stimuli. This chapter, so far as it goes, is a valuable contribution to the study of the developmental mechanics of plants.

The illustrations are, as a whole, very good, as they illustrate clearly the structural features. They are, with few exceptions, line drawings, and a trifle over half are original. An extensive working bibliography is found in the footnote references.—ERNST A. BESSEY.

MINOR NOTICES.

STRASBURGER'S[2] *Das botanische Practicum* has reached the fourth edition. It seems safe to say that no botanical text-book of modern times is more fully abreast of the present state of knowledge. While the new edition preserves the general arrangement and sequence of subjects which have proved satisfactory in previous editions, each subject has been carefully revised and brought up to date, even matters like the latest investigations upon protoplasmic connections receiving attention. The newest methods in technique are also presented.

The indices are more extensive than in any previous edition, occupying 145 pages. There are five, as follows: I. An alphabetical index of the plants which are used as illustrative material. II. A list of plants used as illustrative material, arranged with reference to the time of year at which they should be collected. III. A list of stains and reagents. IV. Reagents, stains, plant substances, imbedding media, and sealing media; chemical exercises; instruments, apparatus, and their use; making of preparations; and physical exercises. V. General index. The first two indices will be suggestive and helpful to those who have the responsibility of keeping laboratories supplied with illustrative material. The fourth index is so full that in

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[2] STRASBURGER, EDUARD, Das botanische Practicum. Fourth edition. 8vo. pp. l + 771. *figs. 230.* Jena: Gustav Fischer. 1902. *M* 20.